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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,831	04/05/2004	Shinji Miwa	118969	2713

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EXAMINER

REDDING, THOMAS M

ART UNIT	PAPER NUMBER
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2624

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/816,831

Applicant(s)

MIWA ET AL.

Examiner

Thomas M. Redding

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 4/05/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections - 37 CFR 1.75(a)

1. The following is a quotation of 37 CFR 1.75(a):

The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

2. Claims 4 is objected to under 37 CFR 1.75(a), as failing to particularly point out and distinctly claim the subject matter which application regards as his invention or discovery.

Claim 4 recites the limitation "said image object" in the 4th line. There is insufficient antecedent basis for this limitation in the claim. For the purpose of examination, it will be assumed the intent is "said object image".

Correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claims 15 and 16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 15 and 16 define computer programs embodying functional descriptive material. However, the claim does not define a computer-readable medium or computer-readable memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program

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on "computer-readable medium" or equivalent; assuming the specification does NOT define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory (refer to "note" below). Any amendment to the claim should be commensurate with its corresponding disclosure.

Note:

A "signal" (or equivalent) embodying functional descriptive material is neither a process nor a product (i.e., a tangible "thing") and therefore does not fall within one of the four statutory classes of § 101. Rather, "signal" is a form of energy, in the absence of any physical structure or tangible material.

Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a "signal", the claim as a whole would be non-statutory. In the case where the specification defines the computer readable medium or memory as statutory tangible products such as a hard drive, ROM, RAM, etc, as well as a non-statutory entity such as a "signal", "carrier wave", or "transmission medium", the examiner suggests amending the claim to include the disclosed tangible computer readable media, while at the same time excluding the intangible media such as signals, carrier waves, etc.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 –7 and 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dichter (US 6,137,903) in combination with Goldsmith (US 7,110,597 B2).

Regarding claims 1, 13 and 15, Dichter discloses [a]n image processor for unifying color tones of plural correcting object images ("It is an object of the invention to automatically transform images into a common color space. This produces a feeling that all images belong to the same color family. The common color space can belong to the target image or can represent some average of all images involved", Dichter, column 1, line 23), the image processor comprising: an image selecting device that selects the plural correcting object images as a correcting object from an image ("A plurality of color samples are picked at points on the target image", Dichter, column 2, line 8); and an image correcting device that selects a reference color which is a representative color of the correcting object for every correcting object image, and corrects the color tone of the correcting object image such that the reference colors set for every image to be corrected conform ("The color variation of the original image is determined by analyzing each image point of the original image to determine its distance or spacing in a color space from the representative color in the original image and then using this distance as an additional factor in transforming the image points of the original image to the transformed image", Dichter, column 2, line 19).

Dichter does not clearly disclose an image selecting device that selects the plural correcting object images as a correcting object from plural images.

Goldsmith, working in the same field of endeavor of image correction, does teach an image selecting device that selects the plural correcting object images as a correcting object from plural images ("If multiple reference images are used some combining method, such as averaging, may be used to achieve a more accurate reference pixel characteristic.", Goldsmith, column 7, line 65).

It would have been obvious at the time the invention was made for one of ordinary skill in the art to use the multiple image reference method of Goldsmith with the image correction system of Dichter in order to generate a more accurate correction ("For example, if the unique subject is a person, and there are ten possible reference pictures, but the person was sick in two and very tan in one, the average skin color of the person will more likely resemble the accurate skin color for that person", Goldsmith, column 7, line 67).

Regarding claims 2, 14 and 16, Dichter does not explicitly disclose an image processor further comprising a processing condition selecting device that makes a user select one or plural correction processing conditions of the correction processing executed by said image correcting device through an input device.

Dichter does describe several processing conditions and alternatives ("In addition to calculating and applying the transformation to achieve the best match between target image and the image to be transformed the correction can be applied to a certain degree only, or can be applied to over -correct the original according to the operator's subjective impression", "certain areas of the original image described by a geometrical mask (including "hard" masks defined by unchanging values and "soft" masks having changeable values) can be excluded from the transformation", "Instead of having the original image in an HSL color space, one can have the original image in the CMYK color space and to pre-calculate or calculate on the fly its HSL representation", Dichter, column 7, lines 13-26).

It would have been obvious at the time the invention was made for one of ordinary skill in the art to provide a processing condition selecting device that makes a user select one or plural correction processing conditions of the correction processing executed by said image correcting device through an input device with the color correction system of Dichter in order to dynamically adjust the system in response to user input ("according to the operator's subjective impression", Dichter, column 7, line 17) and to make efficient use of the software code, i.e. one program with selectable options rather than several programs with no adjustment.

Regarding claim 3, the combination of Dichter and Goldsmith discloses said image correcting device further comprising:

a reference color setting device that sets a reference area which is a partial area or an entire area of the correcting object image for every said correcting object image, and sets the representative color calculated on a basis of pixel information of a pixel constituting said set reference area as the reference color (Dichter, figure 3A - step A and figure 3B step B) ;

a target color setting device that sets, as a target color, a color after the correction common to said each correcting object image when said reference Colors set for every said correcting object image by said reference color setting device are conformed (Dichter, figure 3F – Step F, correction values are calculated);

and a pixel information correcting device that sets the correcting amount of the color tone of said each pixel in accordance with a changing degree when said reference color is changed to said target color, and corrects said pixel information of said each pixel on the basis of said set correcting amount (Dichter, figure 3F – Step F, Dichter is calculating and applying the correction).

Regarding claim 4, the combination of Dichter and Goldsmith discloses at least one of the following areas being set as said reference area,

all areas of said correcting object image,

said image object area having a maximum area within plural image object areas constituting said correcting object image,

an area recognized as a common shape and existing within said plural correcting object images,

an arbitrary area within said correcting object image designated by a user through an input device, and

said image object area of the correcting object image including an arbitrary portion within said correcting object image designated by a user through the input device ("a cursor on the video monitor can be employed to pick off color samples from a plurality of locations shown by Xs at 26 from the target image 19 of the composite target image", Dichter, column 3, line 67).

Regarding claim 5, The combination of Dichter and Goldsmith discloses said pixel information correcting device correcting said correcting amount of said pixel information of the pixel with respect to only said pixel existing in the image object area including said reference color and a color near said reference color ("In sub-step 1 it is determined whether or not the composite original image HSL values are substantially equal to the representative (average) original image color represented by the values H_s S_s L_s . If this is the case, then transformation portion 29 changes the H, S, and L values of that particular image point of the original image to H_{after} S_{after} and L_{after} which are equal to the representative values H_s S_s L_s of the target image 19 of the composite target image 17", Dichter, column 5, line 6).

Regarding claim 6, The combination of Dichter and Goldsmith discloses said pixel information correcting device correcting said correcting amount of said pixel information of the pixel with respect to all said pixels of said correcting object image ("It

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is also an object of the invention to take an original image and to change the coloring in either all or a portion of that original image based on color in a selected portion of another image known as a target image, while also taking into account color variations in the original image.”, Dichter, column 1, line 28).

Regarding claim 7, The combination of Dichter and Goldsmith discloses said pixel information correcting device comprising: a correcting amount detecting device that detects said correcting amount when said reference color is changed to said target color so as to conform said reference color and said target color (“In sub-step 1 it is determined whether or not the composite original image HSL values are substantially equal to the representative (average) original image color represented by the values H_s S_s L_s ”, Dichter, column 5, line 6); and a correcting amount adjusting device that adjusts the correcting amount of said pixel information of the pixel on the basis of said pixel information of said pixel as the correcting object of said correcting object image and said correcting amount detected by said correcting amount detecting device (“then transformation portion 29 changes the H, S, and L values of that particular image point of the original image to H_{after} S_{after} and L_{after} which are equal to the representative values H_s S_s L_s of the target image 19 of the composite target image 17”, Dichter, column 5, line).

Regarding claim 11, The combination of Dichter and Goldsmith discloses said correcting amount adjusting device adjusting the correcting amount in accordance with

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a difference between characteristics of said reference color and characteristics of a color of said pixel (Dichter, figure 4).

Regarding claim 12, the combination of Dichter and Goldsmith discloses said correcting amount adjusting device adjusting the correcting amount in accordance with a difference between characteristics of said reference color and characteristics of the representative color of said image object area to which the pixel belongs (Dichter, figure 3F, sub-step 2).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dichter (US 6,137,903) and Goldsmith (US 7,110,597 B2).

Regarding claim 10, the previous combination of Dichter and Goldsmith did not teach said correcting amount adjusting device adjusting said correcting amount so as to be constant irrespective of characteristics of the color of said pixel.

Goldsmith does teach said correcting amount adjusting device adjusting said correcting amount so as to be constant irrespective of characteristics of the color of said pixel ("The comparison may include calculating a scalar correction vector, which when multiplied by the color vector representing Jane's skin tone in the image to be corrected 202 results in the color vector representing Jane's skin tone in the reference image", Goldsmith, column 5, line 45).

It would have been obvious at the time the invention was made for one of ordinary skill in the art to combine the constant color correction method of Goldsmith with the image correction system of the preceding combination of Dichter and Goldsmith in order to provide an alternative means of calculating the pixel correction ("Since C_p and C_r are known after the calculations explained above, determining the correction vector in one embodiment of the invention can be done by:

(34) $V = C_r / C_p$ where V represents vector division in the colorspace", Goldsmith, column 5, line 59,) where the static correction vector of Goldsmith is simple and quick to calculate, easy to apply via a vector multiplication and may provide faster program execution.

6. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dichter (US 6,137,903) and Goldsmith (US 7,110,597 B2) in combination with Usikov (US 6,819,805 B2).

Regarding claim 8, The combination of Dichter and Goldsmith discloses all the elements of claim 7, but Dichter and Goldsmith do not disclose correcting amount adjusting device adjusting the correcting amount in accordance with a distance between said reference area and said pixel.

Usikov, working in the same field of endeavor of image correction, does teach a correcting amount adjusting device adjusting the correcting amount in accordance with a distance between said reference area and said pixel ("Recall that the relative brightness variation from one pixel to another due to illumination by the point source 10 is entirely a function of the location of the point source 10 relative to the object 14", Usikov, paragraph 26).

It would have been obvious at the time the invention was made for one of ordinary skill in the art to combine the intensity compensation method of Usikov with the color correction system of Dichter and Goldsmith to "minimize detrimental effects in the observed or measured brightness of an image that are due to the illumination unevenness associated with using a point source illumination geometry to illuminate an object being imaged" (Usikov, paragraph 18).

Regarding claim 9, the combination of Dichter, Goldsmith and Usikov teaches said correcting amount adjusting device adjusting the correcting amount in accordance with a distance between said reference area and said image object area to which said pixel belongs ("Recall that the relative brightness variation from one pixel to another due to illumination by the point source 10 is entirely a function of the location of the point source 10 relative to the object 14", Usikov, paragraph 26, comparing different areas in the image which are similar).


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas M. Redding whose telephone number is (571) 270-1579. The examiner can normally be reached on Mon - Fri 7:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian P. Werner can be reached on (571) 272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TMR/



BRIAN WERNER
SUPERVISORY PATENT EXAMINER